Chapter 1.0

Purpose and Need

The Purple Line is a proposed 16.2-mile transit line located north and northeast of Washington DC, inside the circumferential I-95/I-495 Capital Beltway (Figure 1-1). The Purple Line would extend between Bethesda in Montgomery County and New Carrollton in Prince George's County. The "Purple Line corridor" includes five major activity centers: Bethesda, Silver Spring, Takoma/Langley Park, College Park, and New Carrollton.

The need for an east-west transit route in Montgomery and Prince George's counties has been identified, in various forms, for more than 20 years in regional studies and local land use plans. The Federal Transit Administration (FTA) and the Maryland Transit Administration (MTA) developed the purpose and need for the Purple Line project during the National Environmental Policy Act (NEPA) scoping process and presented it to the public in 2003. The Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) was completed and published in 2008. This Final Environmental Impact Statement (FEIS)/Draft Section 4(f) Evaluation updates the purpose and need in light of currently available data.

Changes to this Chapter since the AA/DEIS

This chapter follows the general format of Chapter 1.0 of the AA/DEIS, with some minor organizational changes. For example, Chapter 1.0 of the AA/DEIS described the public involvement program, which now appears in Chapter 8.0 of this FEIS. This FEIS also updates population, employment, and traffic data. Year 2040 is now the horizon year versus 2030 in the AA/DEIS.[1]

Because the DEIS was prepared concurrently with an AA for FTA's New Starts program, Chapter 1.0 of the AA/DEIS presented goals and objectives for the project developed to support decision-making for the alternatives analysis. These goals and objectives covered a broader range of issues beyond those directly arising from the purpose and need. The AA/DEIS considered the goals and objectives in the evaluation of the alternatives, as part of the requirements for an Alternatives Analysis required by FTA, in addition to considering the alternatives' ability to meet the purpose and need. Chapter 9.0 of this FEIS evaluates how well the Preferred Alternative addresses the purpose and need.

1.1 Purpose of the Project

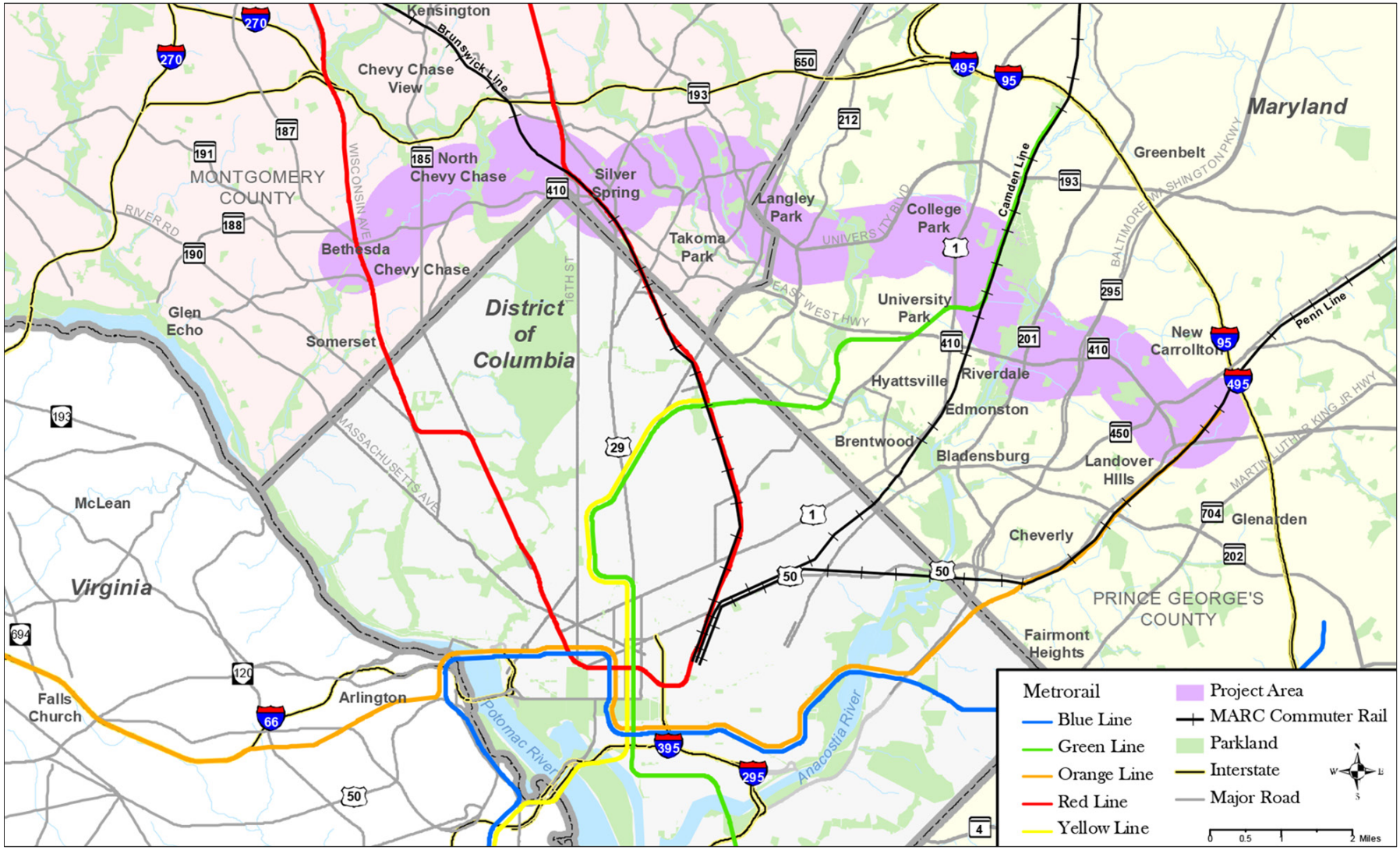
The purpose of the Purple Line project includes the following:

- Provide faster, more direct, and more reliable east-west transit service connecting the major activity centers in the Purple Line corridor at Bethesda, Silver Spring, Takoma/Langley Park, College Park, and New Carrollton,
- Provide better connections to Metrorail services located in the corridor, and
- Improve connectivity to the communities in the corridor located between the Metrorail lines.

Growing population and employment in the region has resulted in increasingly congested roadways.

[1] FTA requires that a project sponsor quantify measures using at least a 20-year horizon. The AA/DEIS, completed in 2008, used a horizon year of 2030; five years later, the FEIS uses 2040 to be consistent with the MWCOG Transportation Planning Board forecasts.

Figure 1-1. Project Area



Changing land use patterns in Montgomery and Prince George's counties have increased the amount of suburb-to-suburb travel to and from the corridor's major activity centers. The existing transit system is primarily oriented to accommodate travel in and out of Washington DC. The only transit service available for direct east-west travel is bus service, which is often slow and unreliable because it operates on a congested roadway system. East-west travel on Metrorail within the corridor is possible, but requires a trip into and then out of Washington DC. The Purple Line project proposes to reduce or eliminate these deficiencies.

The constraints of traffic congestion, lack of opportunity to increase roadway capacity, topography of steep stream valleys, and existing heavy rail corridors, which constrain the physical environment, limit the solutions which could be used to address the needs described above.

1.2 Project History

In 1983, CSX Transportation (CSXT) proposed the abandonment of freight rail operations on the Georgetown Branch between Georgetown and the CSXT Metropolitan Subdivision. Montgomery County evaluated the use of the Georgetown Branch right-of way for transit between Bethesda and Silver Spring in the East-West Transitway Feasibility Study (1986) and began discussions with the railroad about acquiring the right-of-way.

In 1988, Montgomery County purchased the Georgetown Branch railroad right-of-way between the CSXT Metropolitan Subdivision and the Washington DC limits under section 8(d) of the National Trails Systems Act.[2] This act encourages the establishment of trails to preserve existing railroad rights-of-way that are no longer in service for potential future reactivation of rail service. The Montgomery County Parks Department was given jurisdiction over the right-of-way from the Washington DC line to Bethesda for the construction of a multi-use trail. The portion east of Bethesda was put under the jurisdiction of the Montgomery County Department of Transportation for the purpose of building both a transitway and a trail. These dual uses of this portion of the right-of-way have been a part of the Georgetown Branch Master Plan since 1990.[3] The 1990 Master Plan amendment recommended that the trail and transitway be built at the same time to reduce community impacts.

The Purple Line in the CLRP

The National Capital Region Transportation Planning Board of the Metropolitan Washington Council of Governments is the federally-designated Metropolitan Planning Organization (MPO) for the region and is the regional forum for transportation planning. The federally-mandated metropolitan planning process requires all MPOs across the country to produce two documents:

- A short-range Transportation Improvement Plan providing a 6-year schedule for obligating federal funds for transportation projects in the region
- A long-range plan, which in the Washington region is called the Financially Constrained Long-Range Transportation Plan (CLRP)

The "Georgetown Branch Trolley," a proposed transit line between Bethesda and Silver Spring, was first included as a project in the 2000 update to the CLRP. The segment from Silver Spring to New Carrollton was added to the CLRP in 2003 as a study. In 2009 the CLRP was amended to include the entire Purple Line as a light rail project. The Purple Line is now included in the 2013-2018 Transportation Improvement Program and in the July 2012 update to the National Capital Region's CLRP.

[2] National Trails System Act, 16 USC 1247 (d)

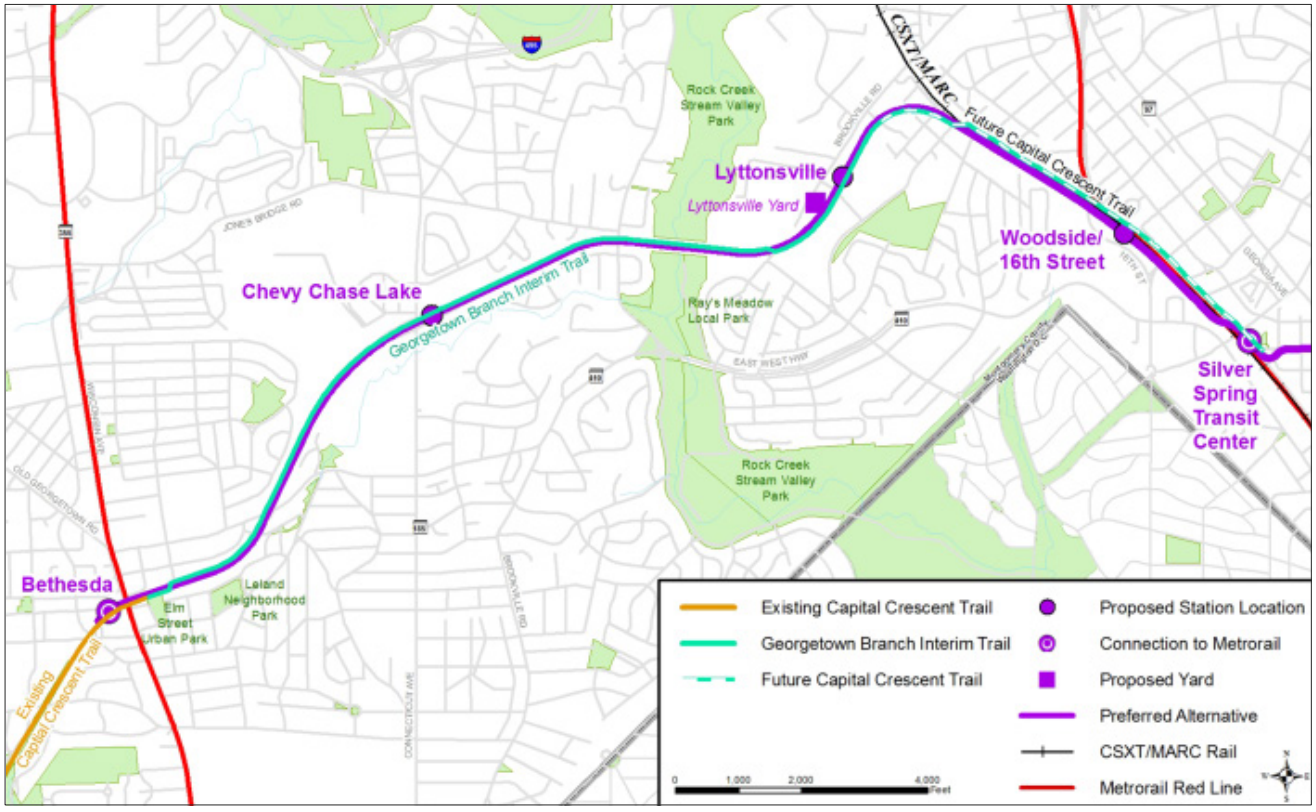
[3] Maryland-National Capital Park and Planning Commission, *Georgetown Branch Master Plan Amendment*, 1990

In 1996, pending a decision on the construction of a transitway, the county removed the tracks and ties and built a temporary, or interim, trail using crushed stone between Bethesda and Lyttonsville. The Rock Creek trestle bridge east of Jones Mill Road had been damaged by fire resulting in a gap in the trail until a new trestle bridge was constructed in 2003. East of Lyttonsville, the interim trail extends to Silver Spring as a signed route on local streets. As shown in Figure 1-2, the interim trail between Bethesda and Lyttonsville, the Georgetown Branch Interim Trail, is a segment of the larger Capital Crescent Trail, which currently extends 7 miles farther southwest to Georgetown and would be extended east to Silver Spring under the current Master Plan.

The larger Purple Line project between Bethesda and New Carrollton is a direct outgrowth of prior transportation planning activities in the study area, specifically, *The Potential for Circumferential Transit in the Washington Region* (MWCOG Transportation Planning Board, 1993) and the *Capital Beltway High Occupancy Vehicle (HOV) Lane Study* (initiated by the State Highway Authority [SHA] in 1993), which in 1998 became the *Capital Beltway Corridor Transportation Study*.

The Potential for Circumferential Transit in the Washington Region assessed the potential for circumferential rail, bus, and HOV services to provide viable links between suburban residential, commercial, and employment centers, thereby enhancing mobility in the Washington metropolitan area. The report concluded that the pattern of suburban land activity inherent in 20-year forecasts would not provide a viable basis for circumferential rail transit along the Capital Beltway or along outer suburban corridors; whereas the "Inner Purple Line corridor," inside the Capital Beltway, would be a viable circumferential rail transit line. It also identified the Georgetown Branch connection between the Bethesda and Silver Spring Metro stations as the most promising circumferential rail linkage inside the Capital Beltway.

Figure 1-2. Georgetown Branch Interim Trail



In 1993, the SHA initiated the *Capital Beltway High Occupancy Vehicle (HOV) Lane Study*. This study was renamed the *Capital Beltway Corridor Transportation Study* in 1998 and broadened to include rail transit alternatives inside and outside of the Capital Beltway, based on a recognition that congestion could not be addressed by widening the Capital Beltway alone, and it was concluded that a multimodal solution was necessary. Based on this conclusion, the SHA and MTA jointly conducted the *Capital Beltway/Purple Line Study (2002),* which considered several heavy rail (Metrorail) and light rail lines that extended parallel to the 42-mile segment of the Capital Beltway in Maryland, from the American Legion Bridge to the Woodrow Wilson Bridge. The corridors included routes located along, outside, inside, and crossing the Capital Beltway. In all, six different corridors using either heavy rail or light rail technology were considered. Of the *Capital Beltway/Purple Line Study* corridors, Options P2 (heavy rail) and P6 (light rail) extended from Bethesda to New Carrollton. The *Capital Beltway/Purple Line Study* recommended the "Inner Purple Line" (inside the Capital Beltway between Bethesda and New Carrollton) as the priority transit corridor. The name "Purple Line" was adopted in the *Capital Beltway/Purple Line Study* to be consistent with the Washington Metropolitan Area Transit Authority's (WMATA) practice of naming Metrorail routes by color and to emphasize the connections with the existing Metrorail system. The use of this term does not mean that the project would become part of the existing heavy rail Metrorail system.

The *Capital Beltway/Purple Line Study* eliminated several transit modes from further consideration, specifically heavy rail and monorail, due to their high capital cost, and, for monorail, excessive community impacts. The study included an environmental overview that described the affected environment, potential impacts to resources such as streams, parklands, and communities, and potential mitigation needs.

Table 1-1 presents a timeline of key studies and activities related to the Purple Line project.

1.3 Corridor Setting

The five major activity centers in the Purple Line corridor are Bethesda, Silver Spring, Takoma/Langley Park, College Park, and New Carrollton. Each has a substantial employment base and surrounding residential communities, and all have a Metrorail station except Takoma/Langley Park. The Purple Line corridor also contains five major stream valleys: Rock Creek, Sligo Creek, Long Branch, Northwest Branch, and Northeast Branch. The topographic features of these stream valleys and the long linear parks that protect them effectively constrain the roadway network to a limited number of stream crossings. Two railroad corridors have a similar effect on the roadway network.

The Purple Line corridor is marked by high transit usage and contains a large number of residents who do not own a vehicle. The WMATA Metrorail system and the MARC commuter rail lines provide fast and reliable rail transit service along radial (north-south) routes that pass through the corridor into Washington DC. By contrast, the east-west transit service within the corridor is more limited and of lower quality. There is no east-west rail transit service in the corridor. East-west bus transit service is available, but it is often slow and unreliable because it operates in traffic on a congested roadway network. The bus service is provided by multiple operators and often requires that patrons transfer between routes and providers.

The following subsections describe the existing and expected future land use patterns, existing transit services, transit service markets, projected population and employment growth, traffic conditions, and lack of transit system connectivity in the Purple Line corridor, which provide the context for the project need.

Table 1-1. Purple Line History Timeline

Date	Event
1986	*East-West Transitway Feasibility Study* evaluated the use of the Georgetown Branch right-of way for transit. (Montgomery County)
1986	*Georgetown Branch Master Plan Amendment* designated the right-of-way as a public right-of-way for use for public purposes. (Montgomery County)
1988	Montgomery County purchased the unused Georgetown Branch railroad right-of-way for use as a transitway and trail.
1988	*Study of the Appropriateness and Applicability of Light Rail Transit in Maryland* identified the Georgetown Branch as the most cost-effective area for light rail. (MDOT)
1990	*Georgetown Branch Master Plan Amendment* recommended use of the Georgetown Branch for trolley and trail. (Montgomery County)
1990	*Georgetown Branch Trolley/Trail Conceptual Report* identified results of MTA's evaluations and cost estimates for light rail and a trail. (MTA)
1993	*Potential for Circumferential Transit in the Washington Region* identified the Georgetown Branch as the most promising circumferential rail linkage inside the Beltway. (MWCOG TPB)
1996	*Georgetown Branch Transitway/Trail Major Investment Study/Draft Environmental Impact Statement* evaluated bus and light rail and a trail between Bethesda and Silver Spring. A Final Environmental Impact Statement was never produced for this study. *(MTA)*
2002	*Capital Beltway/Purple Line Study* recommended "Inner Purple Line" between Bethesda and New Carrollton as the priority transit corridor to address congestion on the Capital Beltway. (SHA/MTA)
2002	*Purple Line East, Silver Spring to New Carrollton Study* initiated. (WMATA) *Georgetown Branch Study* renamed *Purple Line West, Bethesda to Silver Spring. (MTA)*
2003	Both studies combined to become *Bi-County Transitway Study*, Notice of Intent is published. (MTA/FTA)
2007	Project returned to the name "Purple Line." (MTA/FTA)
2008	*Purple Line AA/DEIS* distributed for public review.
2009	Governor Martin O'Malley identified a Locally Preferred Alternative.

FTA = Federal Transit Administration
MDOT = Maryland Department of Transportation
MTA = Maryland Transit Administration
MWCOG = Metropolitan Washington Council of Governments
SHA = Maryland State Highway Administration
TPB = National Capital Region Transportation Planning Board
WMATA = Washington Metropolitan Area Transit Authority

1.3.1 Existing Land Use

The area northwest of Washington DC within the Capital Beltway experienced rapid development following World War II and now contains mature neighborhoods, with most housing constructed prior to 1960. The Purple Line corridor includes established inner-ring communities that contain areas of higher-density development in Bethesda, Silver Spring, Takoma/Langley Park, College Park, and New Carrollton. Many commercial areas in the corridor are primarily retail (e.g., strip shopping centers) and are often older in design and function. These areas have substantial deficiencies in transit access and pedestrian circulation. The residential communities are of varying income levels.

Land use in the Montgomery County portion of the Purple Line corridor is primarily residential, with large concentrations of commercial development in Bethesda and Silver Spring. The communities in the corridor include a mix of housing types and densities. Much of the newer development, particularly in Bethesda and Silver Spring, is mixed-use high-rise development compatible with transit-oriented development (TOD) principles. Most of these areas have, in part or in whole, plans that emphasize transit-oriented mixed-use development in areas adjacent to transit stations.

Land uses in the Prince George's County portion of the Purple Line corridor include both residential and commercial uses. Much of the residential development is single-family homes and garden apartments. The retail uses are primarily strip shopping centers. The more recent development includes institutional and office uses.

There is notable institutional development in the Purple Line corridor, including the University of Maryland at College Park (UMD). UMD is the largest employer in Prince George's County with over 13,000 employees and 37,000 students. An increasing number of federal agencies have relocated to the corridor, including medical and research facilities such as the Forest Glen Annex of

Fort Detrick (formerly the Walter Reed Medical Center Annex), the National Oceanic and Atmospheric Administration, the US Department of Agriculture, the Internal Revenue Service (IRS), and the Food and Drug Administration. This trend is expected to continue with further relocations in the future.

Bethesda

The Bethesda central business district (CBD) is characterized by high-density mixed uses. Montgomery County planned for, and encouraged, the dense development of Bethesda around the Metro station by adopting zoning that encouraged high-rise development. The CBD has developed as planned and continues to grow, particularly in the south and west. Indicative of this development is Montgomery County's decision to move forward with the construction of a new south entrance to the Bethesda Metro station. The need for this entrance was anticipated when the station was initially built but deferred until station usage required it (see Chapters 2.2.1, 2.3.1, and 7.2.1, for further discussion of the proposed South Entrance).

East of the Bethesda CBD in the Purple Line corridor, single-family and some multi-family residences predominate, with some small-scale commercial development at Chevy Chase Lake on Connecticut Avenue.

Silver Spring

Downtown Silver Spring is experiencing extensive redevelopment. This development, centered on the multimodal Silver Spring Metro station, is urban in character with a mix of commercial, residential, and entertainment uses. As part of a public/private venture at the existing Silver Spring Metrorail station, the MTA, Montgomery County, and WMATA are building a new expanded transit center with adjacent TOD. The Silver Spring Transit Center (SSTC) will serve Metrorail, MARC commuter rail, WMATA Metrobus, Montgomery County Ride On, the Shuttle-UM, and intercity buses. The SSTC also would accommodate a Purple Line station. The county has leveraged this exceptional accessibility by successfully encouraging dense development in the area with zoning and density bonuses around the SSTC. More than $450 million in public investment has attracted about $2 billion in private dollars to revitalize the urban core in downtown Silver Spring.[4]

The eastern Silver Spring and Long Branch communities are characterized by established residential neighborhoods that are compactly developed, containing a mix of single-family and multi-family dwellings.

Takoma/Langley Park

At the border of Montgomery and Prince George's counties, Takoma/Langley Park is characterized by garden apartments, single-family homes, older automobile-oriented commercial areas, and diverse ethnic populations, who typically rely on transit. The area along University Boulevard, known as Maryland's International Corridor, is a major shopping and entertainment center, particularly for the many immigrant communities in the area. Despite relatively low levels of automobile ownership among residents, this area is very congested, with many pedestrians crossing busy roadways to access transit and shopping. The intersection of University Boulevard and New Hampshire Avenue, site of the future Takoma/Langley Transit Center, is one of the busiest bus transfer points in the region.

Land use from Langley Park to New Carrollton, except for UMD, is primarily comprised of residential uses, with several large parks and some commercial areas. Housing types and densities in this area are largely single-family dwellings interspersed with low-rise apartment complexes.

The University of Maryland/College Park

UMD is the largest employer and trip generator in Prince George's County. UMD's hotel and conference center and sports and performing arts facilities are additional sources of activity. Two other developments are currently underway near the UMD campus: the East Campus Redevelopment Initiative and M Square Research Park.

[4] Greater Silver Spring Chamber of Commerce, *About Greater Silver Spring*, www.silverspringchamber.com/silverspring/about_silver_spring/index.html, retrieved 6/21/12

East Campus is a mixed-use project on UMD-owned land on the east side of US 1, south of Paint Branch Parkway. This development will be a mix of residential and commercial uses.

M Square Research Park, located on River Road, south of the College Park-UMD Metro and MARC stations, is a UMD-affiliated public/private partnership that includes research, laboratory, and incubator facilities dedicated to the advancement of technology, computer science, mathematics, engineering, biotechnology, and physical and life sciences. Current tenants include the National Oceanic and Atmospheric Administration, the US Department of Agriculture's Animal and Plant Health Inspection Service, the US Food and Drug Administration's Center for Food Safety and Applied Nutrition, and the American Center for Physics. Additional construction is underway, and as Maryland's largest research park, it is expected to employ more than 6,500 people at completion.

WMATA is currently working with private developers to plan future joint development at the College Park-UMD Metro station. This TOD will be a combination of residential and commercial uses.

New Carrollton

The New Carrollton station is a transit hub surpassed only by Union Station in Washington DC for regional accessibility. The New Carrollton station serves the Metrorail Orange Line, the MARC Penn Line from Baltimore and areas north, Amtrak's Northeast Corridor, and a multitude of bus lines. Several large institutional trip generators, including the IRS, are currently located in New Carrollton.

In March 2011, WMATA and the State of Maryland selected a private development team to create a major mixed-use development surrounding the station. The 39-acre site is currently vacant land, parking lots, and access roads. The proposal will allow up to 5.5 million square feet of office, retail, and residential space. A joint development agreement approved December 20, 2012 allows the private development team to move forward. At full build-out, this development will include 2 to 4 million square feet of mixed uses.

1.3.2 Traffic Conditions

The Purple Line corridor faces numerous transportation challenges as a result of limited infrastructure for east-west travel. The primary east-west travel routes in the corridor are heavily congested during peak periods and on weekends.

Many major intersections, such as University Boulevard and New Hampshire Avenue, already experience failing levels of service (LOS) in both morning and evening peak periods. During the peak periods, it currently takes approximately 14 to 24 minutes to travel five miles by car between Bethesda and Silver Spring; 15 to 28 minutes to travel seven miles by car between Silver Spring and UMD; and 18 to 24 minutes to travel 6 miles by car between UMD and New Carrollton, depending on the direction. By 2040, travel times in the morning peak period are expected to increase by approximately 30 percent, and travel times in the evening peak period are expected to increase by approximately 40 percent.[5]

Table 1-2 shows the average daily traffic volumes and LOS for a number of the primary east-west travel routes within the Purple Line corridor and key intersections on these roads.

Because the Purple Line corridor is largely developed, expanding or building new roadways to address the congested conditions on the existing roadway system would be difficult. The projected increases in employment and population will exacerbate the existing conditions (see Section 1.3.5). The impacts of these traffic conditions on bus service are already substantial (as described below), and future conditions will be worse. The congested roadways mean that buses cannot consistently operate on schedule, and travel times are not predictable. Not only does this inconvenience riders, it also means that it is very difficult to operate the network of services reliably and in a manner that optimizes interconnectivity and mobility.

[5] Multiple travel time runs were conducted in both the eastbound and westbound directions during the AM and PM peak periods. Year 2040 travel times were estimated using the average increase in delay across the corridor, based on the projected 2040 traffic conditions.

Table 1-2. Annual Average Daily Traffic Levels and Levels of Service

Location	2010		2040	
	AADT[1]	LOS[2] (AM/PM)	AADT	LOS (AM/PM)
Capital Beltway, Wisconsin Avenue to Georgia Avenue	240,000	F/F	323,000	F/F
Capital Beltway, Georgia Avenue to I-95	221,000	F/F	298,000	F/F
Capital Beltway, I-95 to US 50	219,000	F/F	295,000	F/F
Jones Bridge Road at Connecticut Avenue	79,000	F/F	106,000	F/F
University Boulevard at New Hampshire Avenue	62,000	F/F	84,000	F/F
East West Highway at Connecticut Avenue	70,000	F/F	94,000	F/F
East West Highway at 16th Street	60,000	F/F	81,000	F/F
East West Highway at Baltimore Avenue	63,000	F/F	85,000	F/F
East West Highway at Kenilworth Avenue	65,000	F/F	88,000	F/F
Annapolis Road at Veterans Parkway	66,000	F/F	89,000	F/F

[1] Annual Average Daily Traffic
[2] Level of Service
The 2040 AADT was generated by applying the MDAA II modeled growth rate to 2010.

Source: Maryland SHA, Internet Traffic Monitoring System, http://shagbhisdadt.mdot.state.md.us/itms_public/default.aspx, retrieved September 2012

1.3.3 Existing Transit Service

The Washington DC region has a well-developed transit network, which extends into and through the Purple Line corridor. However, as described below, the transit service in the corridor is primarily oriented to serve north-south trips. East-west transit service exists in the corridor, but it is slower and less reliable.

Stations on both branches of the WMATA Metrorail Red Line, one at Bethesda and one at Silver Spring; the Metrorail Green Line at College Park; and the Orange Line at New Carrollton serve the Purple Line corridor (Figure 1-3). These Metrorail lines are all radial lines into and out of Washington DC. In addition to Metrorail, the corridor is also served by MARC at Silver Spring, College Park, and New Carrollton; Amtrak at New Carrollton; and multiple bus routes.

Although the Purple Line corridor contains a substantial population that relies heavily on transit to reach employment and activity centers, new transit services in this east-west corridor have been limited to bus service on local roads that are subject to the same roadway congestion as automobile traffic. To date, there has been no investment in fixed guideway transit systems to facilitate east-west travel and enhance links between the employment and residential centers along circumferential transportation routes in the Purple Line corridor, nor have new highways been developed in this corridor in recent years. The built-up character of the corridor limits the opportunities to widen existing roads or build new ones.

The Purple Line corridor is faced with increasing travel times which limit accessibility, particularly for those without access to an automobile, and can negatively affect the local economy and residents' quality of life.[6] Table 1-3 shows existing transit travel times between Purple Line corridor activity centers. However, the congested roadways mean that actual travel times, at least for those using bus services, are often slower.

Three public transit operators, WMATA Metrobus, Montgomery County Ride On, and Prince George's County TheBus, provide bus service in the corridor. These bus services accommodate east-west trips in the corridor. However, existing bus services terminate at the county boundary in Langley Park, so bus travel is often disconnected. Congested roadway conditions contribute to slow and unreliable bus services. The demand for east-west travel is shown in the model. Most of these trips are short distances, not end-to-end trips between Bethesda and New Carrollton. The discontinuity of the bus service is simply one more problem with the existing services.

[6] The value of travel time savings and reliability, both in terms of economic costs and quality of life, is discussed in *Economic Impact of Public Transportation Investments*, Glen Weisbrod and Arlee Reno, prepared for APTA, October 2009.

Figure 1-3. Purple Line Connections to Metrorail and MARC

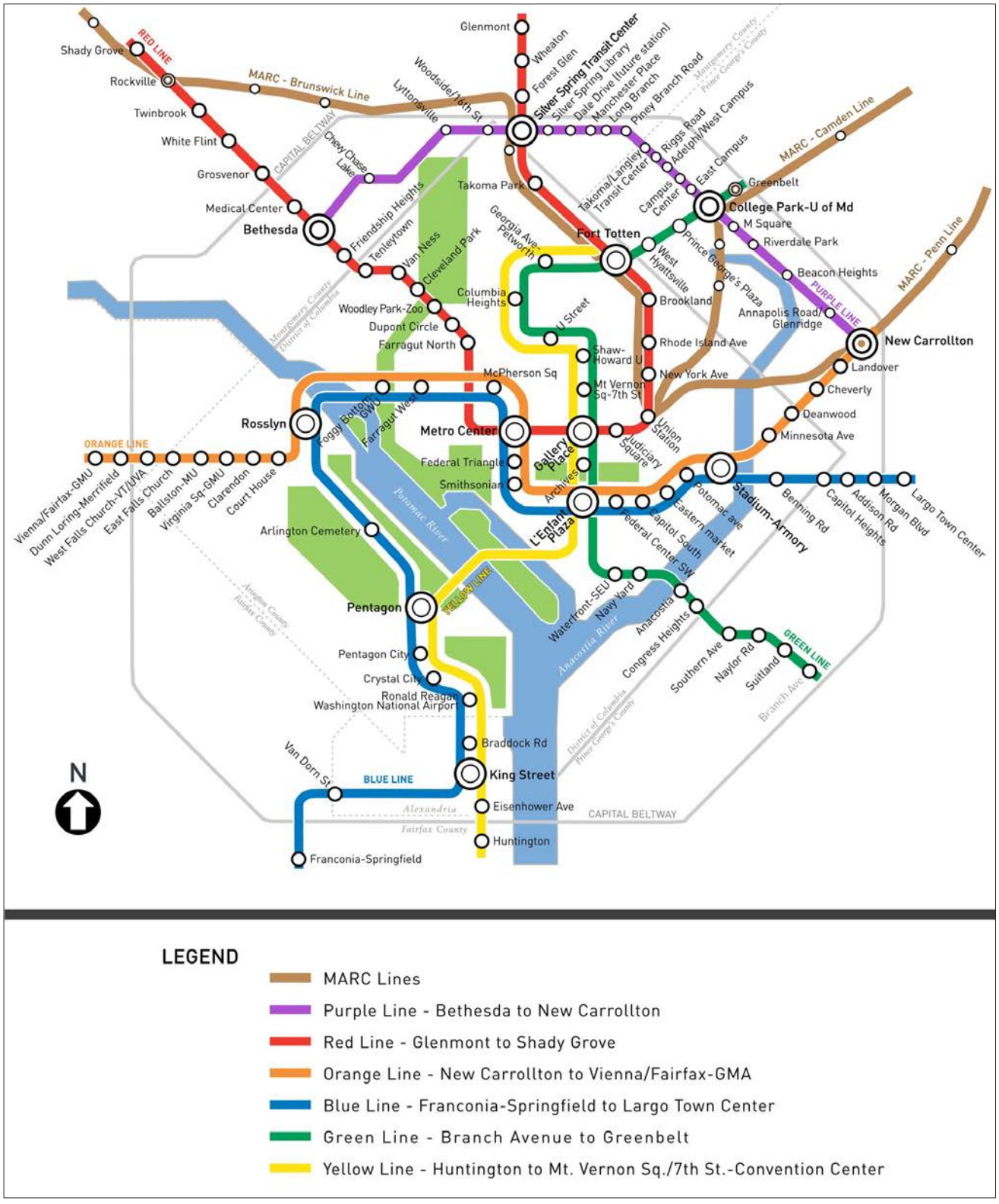


Table 1-3. Average Scheduled Transit Travel Times on Existing Services during Peak Hours, 2012

Location	Metrorail[1]		Bus[2]		
	Distance (miles)	Time (min.)	Bus Route	Distance (miles)	Time (min.)
Bethesda to Silver Spring	16.5	39	J2/J4	4.4	17
Bethesda to Takoma/Langley Park	No Service	No Service	J4	7.7	33
Bethesda to College Park	18.0	48	J4	11.2	49
Bethesda to New Carrollton	19.2	55	J4 & F6	15.6	92
Silver Spring to Takoma/Langley Park	No Service	No Service	J4	3.3	16
Silver Spring to College Park	18.5	25	J4	7.3	36
Silver Spring to New Carrollton	19.4	54	F4	11.2	52
Takoma/Langley Park to College Park	No Service	No Service	J4	4.0	18
Takoma/Langley Park to New Carrollton	No Service	No Service	C4 & F4	9.3	57
College Park to New Carrollton	21.6	56	F6	5.1	18

Note: Metrorail distances are longer because riders must travel into and out of Washington DC to complete these trips.
[1] WMATA does not publish Metrorail schedules for the morning peak period due to the high frequency of trains; Metrorail times are based on peak-hour travel (7:00-7:30 and 4:00-4:30) and calculated from Trip Planner http://www.wmata.com/rider_tools/tripplanner/tripplanner_form_solo.cfm, retrieved May 2012.
[2] WMATA Metrobus schedules; J4, 9-30-12; J2, 1-22-12; F4, 6-17-12; F6,6-17-12, C4, 1-22-12; bus times are based on the fastest scheduled time at 7 AM on a Wednesday morning.

More than 75 bus routes operate in the Purple Line corridor, but of these, just 20 provide east-west service, many only for short distances. Existing public bus service operating east-west in the corridor consists of several overlapping or inter-connecting routes as shown in Figure 1-4. WMATA operates the regional bus routes and those that are inter-jurisdictional, while each of the counties operates local bus routes. WMATA routes J1, J2, and J3 run every six minutes in the peak hours, serving the long-haul trips between Montgomery Mall, Medical Center, Bethesda, and Silver Spring, with 5,900 daily weekday passenger trips.[7] Montgomery County Ride On routes 15 and 16 are the primary bus services between Silver Spring and Langley Park with six- and ten-minute headways, respectively, in the peak hours, and 8,600 daily passenger trips.[8] East of Langley Park, WMATA bus routes C2 and C4 carry most of the passengers, with route C4 diverting south to Prince George's Plaza at Riggs Road and route C2 continuing through the UMD campus, then traveling north on US 1 to the Greenbelt Metro station. WMATA route F6 also serves a portion of the corridor, connecting Prince George's Plaza Metro station with the UMD campus, the College Park-UMD Metro station, and the New Carrollton Metro station.

UMD operates a shuttle bus service for its students, faculty, and staff who make two million trips per year. Three of the 18 Shuttle-UM routes operate in the Purple Line corridor, serving destinations such as the Silver Spring Metro station, the College Park-UMD Metro station, and M Square Research Park. Shuttle-UM 111 duplicates much of the proposed Purple Line alignment, operating on University Boulevard, Piney Branch Road, and Wayne Avenue; and Shuttle-UM 104 provides service between the UMD campus and the College Park-UMD Metro station.

The Metrorail stations in the corridor are all important intermodal transfer points. Table 1-4 shows the daily Metrorail boardings at the four stations.

[7] WMATA, FY 11 Metrobus Weekday Average Ridership, www.wmata.com/pdfs/planning/FY11_Average_Weekday_Bus_Ridership.pdf, retrieved 6/19/12
[8] Montgomery County Ride On, Ride On 2009 Profile of Ridership

Figure 1-4. Existing East-West Bus Service

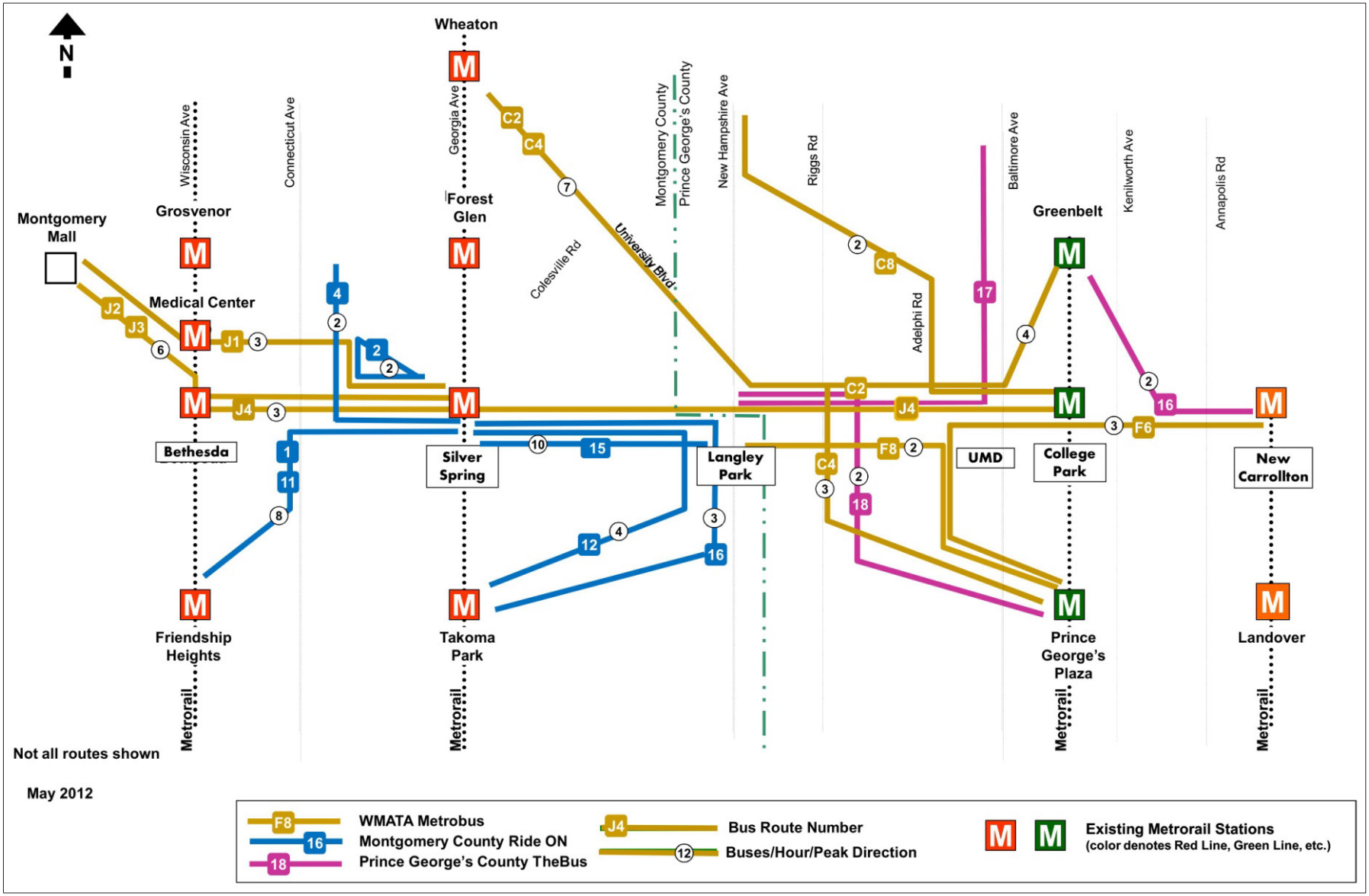


Table 1-4. Daily Metrorail Boardings in Purple Line Corridor, 2010

Metrorail Station	Daily Boardings
Bethesda	10,600
Silver Spring	13,400
College Park/UMD	4,700
New Carrollton	10,300

Source: WMATA, Metrorail Passenger Surveys, Average Weekday Passenger Boardings, rev. 6/2011

The Silver Spring Metro station is a major transportation hub in the region, with more than 160 buses per hour stopping there in the peak hours. It had over 13,300 daily boardings[9] on Metrobus and more than 6,350 weekday boardings on Montgomery County Ride On[10] in 2009. Twenty-seven Metrobus and 22 Ride On routes serve the Silver Spring Metro station, the majority of which terminate in Silver Spring. WMATA route J4 is the only east-west bus route that does not terminate at Silver Spring (thus avoiding a transfer time penalty and ridership loss) for those traveling through Silver Spring. WMATA routes C2 and C4, which travel along University Boulevard in the Purple Line corridor,[11] have the second highest Metrobus ridership in Maryland. Metrobus routes F4 and F6, which serve the area between Silver Spring and New Carrollton, have the highest ridership of any line in Prince George's County other than routes C2 and C4, and experienced ridership growth of five percent between May 2011 and May 2012.[12]

As stated earlier, the New Carrollton Metro station is second only to Union Station in the Washington metropolitan area as a major multimodal transportation hub, with Metrorail, Amtrak, MARC, Greyhound intercity bus, and both regional (Metrobus) and county (TheBus) bus service. Metrobus serves the station with 21 routes, and TheBus serves it with four routes.

1.3.4 Changing Land Use Patterns

Historically, downtown Washington DC has been the location of most jobs in the region, while employees typically lived in residential areas located at the outer edges of Washington DC or in the suburbs. As the suburbs grew, more people commuted longer distances into the center, and the radial Metrorail system was built to serve this travel. However, employers are increasingly moving to suburban areas, resulting in suburb-to-suburb travel patterns. This is reflected in the relocation of many federal agencies to the corridor. Much of the new development has been mixed-use, with both residential and commercial uses in the same areas, if not the same buildings. In the Washington metropolitan area, as is true throughout the United States, suburb-to-suburb travel has increased dramatically in the past 25 years. By 2030, the majority of all trips will be suburb-to-suburb travel.[13] The creation of new jobs and new activity centers in the suburbs means these new travel patterns will continue to grow in the corridor.

1.3.5 Population and Employment Growth

MWCOG has projected increases in population and employment in the Maryland suburbs by 2040. The Purple Line corridor contains 181,395 jobs.[14] Montgomery and Prince George's counties will experience the greatest increases in employment from 2010 to 2040 in the region, with growth of 43 percent and 32 percent, respectively.[15] Population growth in Montgomery County is expected be the highest in the region.[16] Table 1-5 provides growth projections for the major activity centers in the corridor. The planned TOD at New Carrollton is reflected in the 335 percent projected growth in population in the area.

[9] WMATA, Metrorail Passenger Surveys, Average Weekday Passenger Boardings, rev. 6/2011

[10] Montgomery County Ride On, Ride On 2009 Profile of Ridership

[11] WMATA, FY 11 Metrobus Weekday Average Ridership

[12] WMATA, FY 11 Metrobus Weekday Average Ridership www.wmata.com/pdfs/planning/FY11_Average_Weekday_Bus_Ridership.pdf, retrieved 6/19/12

[13] MWCOG/TPB, *Citizen's Guide to Transportation Decision Making in the Metropolitan Washington Region*, (2008)

[14] MTA, *Purple Line Economic Effects Technical Report, (2013)*

[15] MWCOG, *Growth Trends to 2040: Cooperative Forecasting in the Washington Region, Round 8.0*, (Fall 2010) p. 4.

[16] Ibid. p. 6.

Table 1-5. Population and Employment Forecasts at Regional Activity Centers

Location	Population			Employment		
	2010	2040	Change	2010	2040	Change
Bethesda CBD	13,949	24,827	78%	35,503	41,207	16%
Silver Spring CBD	14,123	23,953	70%	30,857	38,860	26%
Takoma/Langley Park	36,803	43,838	19%	7,245	11,386	57%
University of Maryland/College Park	28,641	47,580	66%	31,581	48,604	54%
New Carrollton	1,374	5,983	335%	10,513	17,540	67%

Source: MWCOG Regional Activity Centers, Round 8.0 Cooperative Forecasting: Employment Forecasts to 2040 by Traffic Analysis Zone *(2010).*

1.3.6 Transit Service Markets

The diversity of land uses in the Purple Line corridor means that both origins and destinations for transit patrons are present. The major activity centers in the corridor include businesses, retail, government agency employment centers, educational institutions, and sports and entertainment facilities. With 181,395 jobs in the corridor and 247,024 residents, there is substantial ridership demand. Three distinct travel markets are the following:

- *Travel within the corridor*—A substantial amount of travel occurs entirely within the Purple Line corridor, which contains a variety of land use types. The dominant pattern for this travel reflects people traveling from the residential communities in the corridor to the major activity centers within the corridor: Bethesda, Silver Spring, Takoma/Langley Park, College Park, and New Carrollton. Typically, this type of travel is from the communities adjoining major attractions and is not a lengthy trip across the entire corridor.
- *Travel from within the corridor to destinations outside the corridor*—This pattern reflects people traveling from the residential communities in the corridor, especially Bethesda, Silver Spring, Takoma/Langley Park, College Park, and Riverdale Park, to Washington DC. There is also travel to destinations north of the corridor along the Metrorail Red Line and the Green Line. This travel pattern is typically a relatively short to moderate trip across a portion of the corridor as part of a longer trip. Trips are characteristically from residential communities in the corridor to access the Metrorail and north-south bus services for longer trips to Washington DC and other destinations.
- *Travel from outside the corridor to destinations in the corridor*—This pattern reflects people traveling from the residential communities outside the corridor, especially from the south (northern and eastern Washington DC), from the north (Glenmont and Laurel), and from the east (Bowie) through the New Carrollton Metro station, to destinations in Bethesda, Silver Spring, and College Park. These trips use Metrorail and north-south bus services to access the corridor. These trips involve relatively short distance, travel within the corridor as part of a longer trip.

The Purple Line corridor has approximately 149,000 daily transit trips that have one or both ends of the trip in the corridor. This transit ridership represents 13 percent of the transit trips for the Washington region. About 13,000 of these transit trips have both ends of the trip within the Purple Line corridor while 132,000 transit trips are between the corridor and some part of Washington DC.[17] Most remaining trips involve travel to or from districts to the north or northeast of the Purple Line corridor along the Metrorail lines. This information shows that there are many trips associated with areas outside the corridor, not only Washington DC, but also the areas to the north along the Metrorail Red, Green and Orange lines, especially Shady Grove, the Rockville area, and the Glenmont area.

Daily transit trips in the MWCOG region are forecasted to grow 44 percent from 1,151,994 in 2011 to 1,655,074 by 2040. Similarly, transit trips

[17] MTA, *Purple Line Travel Forecast Results Report (2013)*

related to the corridor are forecasted to grow by 49 percent to 221,833 without the Purple Line.[18] While the general pattern and distribution of these future transit trips would be similar to current trips, the mobility of transit users would be reduced as street-running bus service is slowed by increasing traffic volumes.

1.3.7 Access for Transit-Dependent Populations

Many residents in the corridor are dependent on transit. Table 1-6 presents data from the American Community Survey, which highlights the high percentage of households without a vehicle in many communities in the corridor.[19] Bethesda, Rock Creek (including Lyttonsville and Woodside), Silver Spring, Takoma Park, Langley Park, Riverdale, and West Lanham Hills have rates of zero-car households ranging from 16 percent to 33 percent, which are double or more the overall Montgomery County and Prince George's County rates of eight percent and nine percent, respectively, and the State of Maryland's rate of nine percent. Some communities, notably Bethesda, have low rates of vehicle ownership because of the mobility provided by the existing transit system, particularly Metrorail, rather than because of personal financial constraints. The transit-dependent populations in the corridor are affected adversely by the poor connectivity and unreliability of the existing east-west transit services.

1.3.8 Transit System Connectivity

Although several modal choices (automobiles, Metrorail, commuter rail, and bus service) are available in the Purple Line corridor, current transit options are limited in many areas because the only modes serving east-west markets are automobiles and regular buses, both severely affected by the existing traffic congestion and making access to the radial routes difficult and inconvenient.

The corridor has a lack of direct routes between major activity centers. As a result, a need exists for faster, more reliable, and more direct transit service, with greater capacity and improved system connectivity to address the mobility and accessibility deficiencies in the corridor.

Table 1-6. Households with No Vehicle Available, 2010

Neighborhood/Area	Households with No Vehicle Available (%)
Bethesda	17%
Chevy Chase	8%
Rock Creek	16%
Woodside	14%
Silver Spring	18%
East Silver Spring	10%
Long Branch	15%
Takoma Park	18%
Langley Park	33%
Lewisdale	12%
Adelphi	8%
College Park	9%
Riverdale	18%
Glenridge/ Beacon Heights	12%
New Carrollton	4%
West Lanham Hills	15%
Corridor	**15%**
Montgomery County	**8%**
Prince George's County	**9%**
Maryland	**9%**

Note: Shaded rows are higher than the corresponding County percentage.

Source: U.S. Census, American Community Survey, File B08201, 2006-2010 ACS Five-Year Estimate

Currently, transit riders can travel between Bethesda, Silver Spring, College Park, and New Carrollton on an existing Metrorail line. However, travel between these stations requires either riding into Washington DC and then, in most cases, transferring onto a different radial line, or traveling circumferentially on one or more of the many slow, often discontinuous, indirect bus routes.

Bus services between Bethesda and New Carrollton are limited and generally require transfers between existing bus routes. This necessity further slows travel times and decreases travel convenience and dependability.

Bus utilization in the corridor is constrained by trip times. In most cases, bus travel times are slower than individual automobile trips, since buses typically make frequent stops. These slow speeds do

[18] Ibid

[19] US Census Bureau, American Community Survey, File B08201, 2006-2010 ACS Five-Year Estimate

not provide an incentive for those with automobiles to use transit. Every transfer between bus routes adds substantially to travel times, which inconveniences transit patrons and discourages transit use. A faster, more reliable, and more direct transit service with greater capacity would address the mobility and access deficiencies of the Purple Line corridor.

1.4 Need for the Project

As shown in the description of the corridor in Section 1.3, *Corridor Setting,* there is a demand for high quality east-west transit service in the Purple Line corridor; however this demand is not being met because of the limitations of the existing transportation infrastructure. Specifically, the need for improved east-west transit service in the Purple Line corridor has three distinct components: (1) the need for faster and more reliable east-west transit service, (2) the need for more direct east-west transit connections with Metrorail, and (3) the need for improved east-west transit connections within the corridor.

1.4.1 Need for Faster and More Reliable Transit Service

Faster and more reliable transit service is needed in the Purple Line corridor to address two related transportation problems arising from existing and forecasted transit service market demands: the increasingly detrimental effect of existing and expected future roadway congestion in the corridor on travel times, and the resulting unreliability of the east-west bus transit services in the corridor. The congested roadways mean that bus travel times are not predictable.

The transit service market demands described in Section 1.3 *Corridor Setting* demonstrate the nature and importance of the local and regional travel occurring in the project corridor. Expected growth in population, employment, and activity centers will place a substantial burden on the roadway and transit service networks in the corridor between now and the design year. Road-based bus dependability will deteriorate as traffic congestion grows, making access to destinations such as major activity centers and radial transit services slow and unreliable. Populations that are transit-dependent will be particularly adversely affected by these conditions.

1.4.2 Need for More Direct Transit Connections to Metrorail

The corridor is deficient in fast, reliable east-west transit services providing access to and from the Metrorail system. WMATA's Metrorail service connects Bethesda, Silver Spring, College Park, and New Carrollton. However, since this service is radially oriented, rail travel between these centers requires a lengthy, time-consuming trip into Washington DC and then, in most cases, transferring to a different radial line. A Metrorail trip between Bethesda and Silver Spring requires taking the Red Line into the Washington DC core and then traveling back out. To travel from Silver Spring to College Park by Metrorail requires taking the Red Line to the Washington DC core and then transferring to the Green Line to College Park. The Metrorail station at College Park is approximately one mile from the eastern edge of the UMD campus, requiring a bus transfer to get to or from UMD.

1.4.3 Need for Better Connectivity to the Communities In Between the Metrorail Lines

As noted above, the corridor lacks fast, reliable east-west transit to serve the communities located in the wedges between the Metrorail lines. These communities are dependent on local bus services, which are often slow and unreliable because of the existing congested roadways.

The county bus services, provided by Montgomery County Ride On and Prince George's TheBus, both terminate in Takoma/Langley Park at the county boundary, requiring the through traveler to transfer to continue an east-west trip. The majority of these bus transfers take place at the intersection of University Boulevard and New Hampshire Avenue, which is the planned location of the Takoma/Langley Park Transit Center and a planned Purple Line station.